THE INVENTION CLAIMED IS

1. A method for pathogen detection comprising:

containing optically encoded microbeads,

adding a sample and capture ligand to the contained microbeads

placing the contained microbeads in a mixing holder for sufficient time for the targeted biological sample to adequately bind the microbeads,

adding fluorescent labeled antibodies for attachment to the microbead bound sample,

attaching the microbeads to a disposable capture substrate containing an array of attachment sites for attaching the microbeads thereto,

washing the substrate and attached microbeads, and

inserting the substrate into an optical detection system for optically decoding the microbeads for identification and measurement of the target biological molecules.

2. The method of Claim 1, wherein containing the microbeads is carried out by by placing the microbeads in a cuvet.

3. The method of Claim 1, wherein the mixing holder is vibrated during the time the contained microbeads are placed therein.

4. The method of Claim 1 wherein each of the pattern array of attachment sites on the dipstick is designed to capture a single microbead.

5. The method of Claim 1, wherein the patterned array of attachment sites on the substrate are located at a spatial distance between each as determined by the resolution of the optical detection system.

6. The method of Claim 1, wherein washing the substrate is carried out to

improve the sensitivity of the detection process by removing from the substrate surface all unbound biological constituents and reducing the background solution fluorescence.

7. The method of Claim 1, wherein containing the microbeads is carried out by placing the microbeads in a disposable bead pack.

8. The method of Claim 1, wherein each microbead is of a different color and contains a substrate capture point and a unique assay.

9. The method of Claim 1, wherein each microbead is processed to contain a capture ligand, and a bioagent-specific antibody, and with certain of the microbeads also having a target species bound thereto, and a fluorescent labeled antibody attached thereto.

10. In a portable pathogen detection system using a liquid array multiplex detection basis, the improvement comprising:

a disposable capture substrate containing a patterned array of attachment sites to which processed microbeads containing at least a target sample are attached for optical detection of the microbeads.

11. The improvement of Claim 10, wherein said patterned array of attachment sites are designed to attach thereto a single processed microbead.

12. The improvement of Claim 10, wherein said patterned array of attachment sites is formed such that the attachment sites have a spatial distance therebetween as determined by resolution of an optical detection system.

13. A portable pathogen detection system, comprising:

at least one bead pack containing optically encoded microbead reagents,

at least one disposable capture substrate array of microbead attachment sites thereon, and

an optical analyzer into which said substrate is adapted to be inserted.

14. The system of Claim 13, wherein said at least on mixing chamber is located in a vibration unit.

15. The system of Claim 13, wherein said optically encoded microbead reagents Include a capture ligand and bioagent-specific antibodies for attachment to target species.

16. The system of Claim 13, wherein said optical analyzer includes a reaction chamber for insertion of a substrate therein, and optoelectronics for optical assay detection and decoding of microbeads attached to the substrate.

17. The system of Claim 13, wherein said optically encoded microbead reagents in said least one bead pack contains particular sets of target-specific microbeads providing for highly multiplex detection from a single sample volume.

18. The system of Claim 17, wherein each of said microbeads contains a capture site and a fluorescent, target-specific assay.

19. The system of Claim 18, wherein said fluorescent, target-specific assay may be composed of any liquid array detectable biological species.

20. The system of Claim 13, wherein said ordered array of attachment sites on said at least one substrate is constructed to attach only a single microbead on each attachment site.

21. The system of Claim 13, wherein said ordered array of attachment sites on said at least one substrate are patterned with a spatial distance between sites as determined by a resolution of an optical detection system of said optical analyzer.

22. The system of Claim 13, wherein said optical analyzer includes a reaction chamber where said substrate is at least washed.

23. The system of Claim 13, including a plurality of bead packs and a plurality of substrates.

24. The system of Claim 13, wherein the array is selected from the group consisting of ordered arrays and disordered arrays.

25. The system of Claim 13, wherein the disposable capture substrate is provided with openings in which the microbeads are captured, with the openings selected from the group consisting of a series of wells and a series of channels.

26. The system of Claim 13, wherein the disposable capture substrate is provided with magnetic or electric capture pads, and wherein the microbeads include magnetic or electric charges.

27. The system of Claim 26, wherein the charged microbeads are optically encoded.

28. The system of Claim 13, wherein the disposable capture substrate includes a microbead capture filter.

29. A method for pathogen detection comprising:

containing optically encoded microbeads,

adding a sample and capture ligand to the contained microbeads,

adding fluorescent labeled antibodies for attachment to the microbead bound sample,

inserting a disposable capture substrate containing an array of attachment sites into the contained microbeads for capturing the microbeads, and

inserting the disposable capture substrate into an optical detection system for optically decoding the microbeads for identification and measurement of the target biological molecules.

30. The method of Claim 29, additionally including placing the contained microbeads in a mixing holder for sufficient time for the targeted biological sample to adequately bind the microbeads.

31. The method of Claim 31, wherein placing the contained microbeads in a

mixing holder is carried out prior to adding fluorescent labeled antibodies.

32. The method of Claim 29, additionally including washing the disposable capture solution and attached microbeads.

33. The method of Claim 29, wherein capturing the microbeads is carried out by physical, magnetic, and electrical capturing.

34. The method of Claim 29, wherein said array of attachment sites define a patterned array.

35. The method of Claim 29, wherein said array of attachments sites define an ordered array or a disordered array.